

(12) **UK Patent Application** (19) **GB** (11) **2 177 748 A**

(43) Application published 28 Jan 1987

(21) Application No **8517468**

(22) Date of filing **10 Jul 1985**

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(51) INT CL⁴
A61B 17/12 F16B 2/10

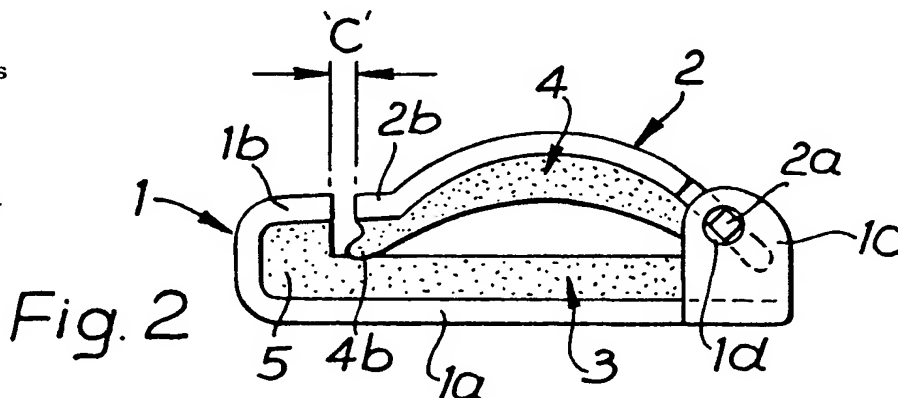
(52) Domestic classification (Edition I):
**E2A 370 375 417 GH
A5R EL
U1S 1048 A5R E2A**

(56) Documents cited
**GB 1530282 GB 1275085 GB 0501059
GB 1420459 GB 0512952 EP 0086640**

(58) Field of search
**E2A
A5R
Selected US specifications from IPC sub-classes F16B
A44B A61B**

(54) **Sexual sterilisation device**

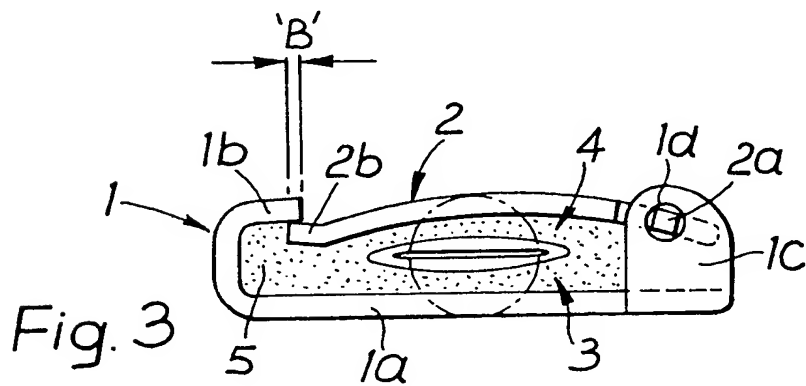
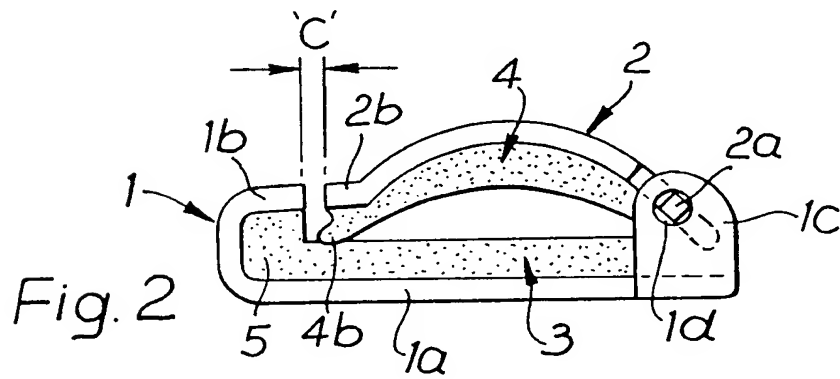
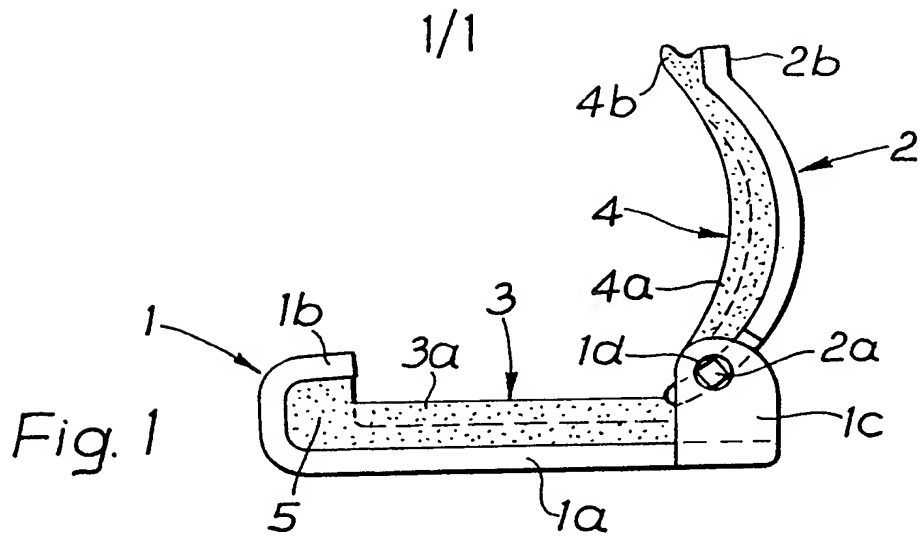
(57) The device in the form of a clip is designed to prevent, as far as possible failure due to incorrect latching of an upper jaw 2 underneath the lip 1b of a lower jaw by dimensioning the upper and lower jaws such that considerable deformation of the upper jaw is required before correct latching can occur.



GB 2 177 748 A

The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.



SPECIFICATION

Sexual sterilisation device

5 This invention relates to a sexual sterilisation device in the form of a clip adapted to be clamped on a Fallopian tube or a vas deferens to effect occlusion thereof.

U.K. Patent Specification No. 1 530 282 describes and claims a clip of this general type, and this form of clip has been widely used with a very small failure rate. Improvements in the reliability of this clip have been achieved by providing the clip with a latching arrangement, whereby one jaw is held under a lip on the other jaw, after closure of the clip, but because of the slight inherent resilience of the metal of the clip, titanium, it has been found that it is still possible for a small passageway to be left open for the passage of gametes if sufficient closing force is not exercised on the clip during application, and this could lead to a failure of sterilisation.

Additionally, the clips are applied by an applicator which has clamping jaws remotely operated through appropriate linkages. It is possible for the applicator to be incorrectly assembled, for example after disassembly for sterilisation of the instrument, or for the linkages to become worn after prolonged use, in either case making it impossible for the surgeon to apply sufficient pressure to the clip to close it fully. The conventional clip may in these circumstances appear properly closed, but still leave a small passageway for gametes, or the potential for such a passageway after the normal physiological changes in the tube have taken place after clamping.

Accordingly, the present invention provides a sexual sterilisation device in the form of a clip adapted to be clamped on and thereby to occlude a duct through which gametes pass, comprising a pair of clamping jaws hinged together, the first jaw having a lip under which the free end of the second jaw is engaged to hold the clip closed, wherein the second jaw is deformable and is dimensioned and arranged such that the free end thereof can only engage under the lip after deformation of the second jaw into occluding engagement with the first jaw.

It will be understood that occluding engagement occurs when the duct is permanently closed to the passage of gametes.

55 Preferably, the second jaw initially curves outwardly between the ends thereof from the first jaw, deformation serving to flatten the second jaw towards the first.

The clip is preferably lined internally with a resilient material, such as a medical grade silicone rubber.

It has been found that, using clips according to the present invention, it is impossible to latch the second jaw under the lip of the first jaw and still leave a passage for the gametes,

and it is therefore expected that a significant reduction in the already small number of failures of the clip will be achieved.

Reference is made to the drawings, in which:—

Figure 1 is a side elevation of a clip in accordance with a preferred embodiment of the invention, in its fully open position;

75 *Figure 2* is a view corresponding to *Fig. 1*, with the second jaw in position prior to closure of the clip; and

Figure 3 is a view corresponding to *Fig. 1*, with the clip closed on a tube representing a duct for gametes.

80 The clip comprises a first jaw 1 in the form of a flat plate 1a having one end curved over to form a lip 1b, and the other end provided with upstanding side plates 1c with aligned holes 1d therein. A second jaw 2 is formed with small posts 2a extending from each side thereof adjacent to one end, the posts 2a serving as a pivot for mounting in the holes 1d to provide a hinging action between the two jaws. The second jaw 2 is curved so as to present a concave face to the first jaw 1, and has catch portion 2b at the free end thereof, bent outwardly from the concave face.

The two jaws 1 and 2 are formed from 95 commercially pure titanium, and are provided with linings 3 and 4 of medical grade silicone rubber. The linings are provided with longitudinal ribs 3a and 4a to reduce the risk of damage to the duct to which the clip is applied. The lining 3 for the first jaw 1 substantially fills the space 5 defined between the lip 1b and the flat part 1a. The lining 4 on the catch portion 2b of the second jaw 2 has a projection 4b.

100 The spacing C (*Fig. 2*) relative to the overall length of the jaw 2 ensures that only when the second jaw 2 is sufficiently deformed to guarantee full occlusion of the tube will sufficient of the catch portion 2b (distance B in *Fig. 3*) be caught under the lip 1b to hold the lip closed. If the second jaw is not sufficiently deformed, and the distance is less than B, the resilience of the projection 4b, coacting with the lining in the space 5, will push the catch portion 2b clear of the lip 1b, and it will be immediately apparent to the surgeon applying the clip that it is not yet latched closed.

A further advantage of the resilience of the projection 4b, and the lining in the space 5, is that it prevents excessive deformation of the second jaw 2, with consequent risk of damage to the duct to which it is being applied.

In practice, the clip of the invention is applied to a duct by the use of an applicator, which enables the surgeon remotely to locate the clip and then apply pressure to deform the second jaw and close the clip. Such applicators are known for use with existing clips of this type, as hereinbefore described.

130 It will be appreciated that the clip of the

invention can be readily adapted, for example by suitably modifying the dimensions and closure position of the jaws, for use either on the Fallopian tubes or on vas deferens.

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CLAIMS

1. A sexual sterilisation device in the form of a clip adapted to be clamped on and thereby to occlude a duct through which gametes pass, comprising a pair of clamping jaws hinged together, the first jaw having a lip under which the free end of the second jaw is engaged to hold the clip closed, wherein the second jaw is deformable and is dimensioned and arranged such that the free end thereof can only engage under the lip after deformation of the second jaw into occluding engagement with the first jaw.

2. A sexual sterilisation device as claimed in Claim 1 in which the second jaw initially curves outwardly between the ends thereof from the first jaw, deformation serving to flatten the second jaw towards the first.

3. A sexual sterilisation device as claimed in Claim 1 in which the clip is lined internally with a resilient material.

4. A sexual sterilisation device as claimed in Claim 3 in which the resilient material is medical grade silicon rubber.

5. A sexual sterilisation device as claimed in Claim 3 or Claim 4 in which the resilient material lining the second jaw is shaped to form a projection extending outwardly from the jaw, which projection acts upon the resilient lining on the first jaw to spring urge the jaws apart until the second jaw has been sufficiently flattened to latch the free end securely under the lip of the first jaw.

6. A sexual sterilisation device substantially as described with reference to the accompanying drawings.

Printed in the United Kingdom for
Her Majesty's Stationery Office, Dd 8818935, 1987, 4235.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.